



## Taxonomic Paper

# First record of *Puerulus mesodontus* Chan, Ma & Chu, 2013 (Crustacea, Decapoda, Achelata, Palinuridae) from south of Java, Indonesia

Yusli Wardiatno<sup>‡</sup>, Agus Alim Hakim<sup>‡</sup>, Ali Mashar<sup>‡</sup>, Nurlisa Alias Butet<sup>‡</sup>, Luky Adrianto<sup>§</sup>, Achmad Farajallah<sup>¶</sup>

<sup>‡</sup> Department of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Bogor Agricultural University, Bogor, Indonesia

<sup>§</sup> Center for Coastal and Marine Resources Studies, Bogor Agricultural University, Bogor, Indonesia

<sup>¶</sup> Department of Biology, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Bogor, Indonesia

Corresponding author: Yusli Wardiatno ([wardiatno@gmail.com](mailto:wardiatno@gmail.com))

Academic editor: Niamh Kilgallen

Received: 08 Feb 2016 | Accepted: 25 Feb 2016 | Published: 07 Mar 2016

Citation: Wardiatno Y, Hakim A, Mashar A, Butet N, Adrianto L, Farajallah A (2016) First record of *Puerulus mesodontus* Chan, Ma & Chu, 2013 (Crustacea, Decapoda, Achelata, Palinuridae) from south of Java, Indonesia. Biodiversity Data Journal 4: e8069. doi: [10.3897/BDJ.4.e8069](https://doi.org/10.3897/BDJ.4.e8069)

## Abstract

### Background

Three specimens of *Puerulus mesodontus* Chan, Ma & Chu, 2013 (Crustacea, Decapoda, Achelata, Palinuridae) were collected from Palabuhanratu Bay, southern Java, Indonesia. There is no previous record on the presence of the species in Indonesia. This finding represents the first record of this species in Java, Indonesia, and confirms that the species is present in the Indian Ocean. The morphological characters of the species are described.

### New information

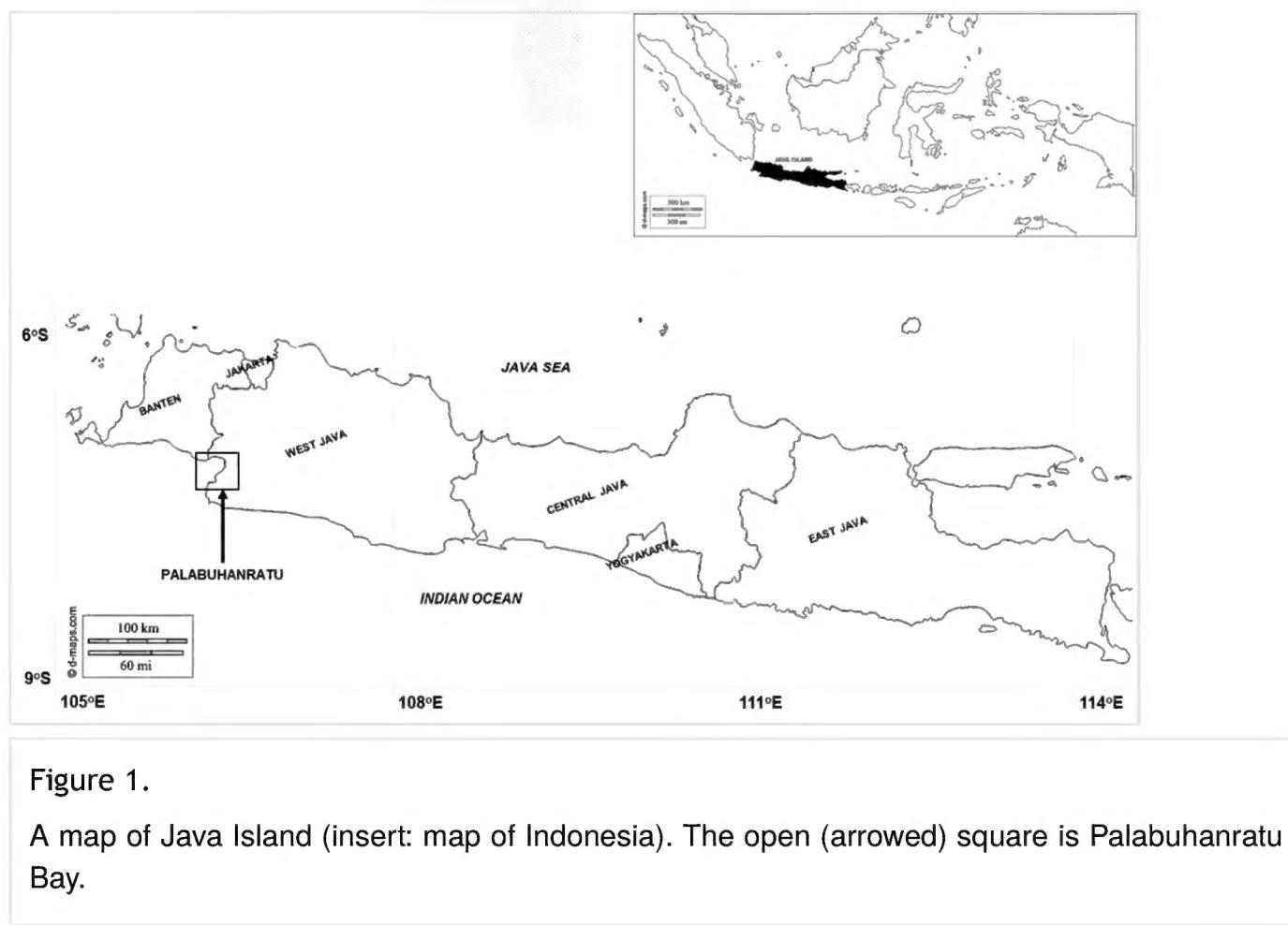
This paper contains a new distribution record of a lobster species from Indonesian waters.

## Keywords

Decapoda, deep-sea spiny lobster, Indian Ocean, new finding, Palabuhanratu bay

## Introduction

The deep-sea spiny lobster genus *Puerulus* Ortmann 1897 lives at depths of 200-700 m in seas of the Indo-West Pacific region facing the Indian Ocean (Holthuis 1991; Chan 1998; Chan et al. 2013). Although the genus is wide in terms of distribution (Chan et al. 2013), it is not of commercial significance (Anrose et al. 2010). However, the genus is economically valued by local communities living on the south coast of Java, Indonesia. Previously, the genus *Puerulus* contained only four species, namely *Puerulus sewelli* Ramadan 1938; *P. velutinus* Holthuis 1963; *P. carinatus* Borradaile 1910; and *P. angulatus* Bate 1888 (Holthuis 1991; Chan 2010). However, the morphological complexity of *P. angulatus*, supported by COI gene sequencing, allowed Chan et al. (2013) to describe five new species, namely *P. quadridentis* Chan, Ma & Chu, 2013; *P. mesodontus* Chan, Ma & Chu, 2013; *P. sericus* Chan, Ma & Chu, 2013; *P. gibbosus* Chan, Ma & Chu, 2013; and *P. richeri* Chan, Ma & Chu, 2013. The new species were not reported from Indonesian waters, but *P. velutinus* and *P. angulatus* were recorded to occur in these waters (Holthuis 1991; Chan et al. 2013). Here, we report, for the first time, that *P. mesodontus* occurs in southern Java, Indonesia.



## Materials and methods

Specimens were collected from a fish harbour located in Palabuhanratu Bay, southern Java, Indonesia, in May 2015. The map in Fig. 1 shows the location of the bay. Three specimens were collected, preserved in 96% (v/v) alcohol, and transported to the laboratory for assessment of morphological characters and identification. The specimens were deposited in the collection of the Department of Aquatic Resources Management, Bogor Agricultural University, Indonesia. Identification was based on morphological characters using the taxonomic key and original description from Chan et al. (2013). One specimen is shown in Fig. 2.

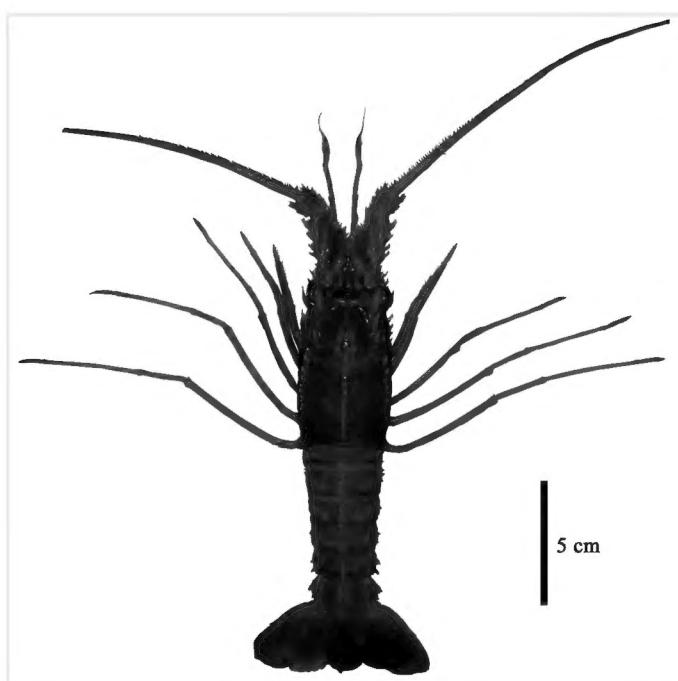


Figure 2.

A (female) specimen of *Puerulus mesodontus* collected from Palabuhanratu Bay, southern Java, Indonesia.

## Taxon treatment

### *Puerulus mesodontus* Chan, Ma & Chu, 2013

#### Material

- a. scientificName: *Puerulus mesodontus*; scientificNameID: *Puerulus mesodontus* Chan, Ma & Chu, 2013; kingdom: Animalia; phylum: Arthropoda; class: Malacostraca; order: Decapoda; family: Palinuridae; genus: *Puerulus*; specificEpithet: *mesodontus*; scientificNameAuthorship: Chan, Ma & Chu 2013; waterBody: Indian Ocean; stateProvince: West Java; locality: Palabuhanratu Bay; verbatimLocality: Palabuhanratu; maximumDepthInMeters: 20; samplingProtocol: local fishing boat and net; eventDate: 2015-05-17; eventTime: unrecorded; habitat: sandy bottom; individualCount: 3; preparations: specimen stored in ethanol 96%; recordedBy: Yusli Wardiatno, Agus Alim Hakim, Ali Mashar, Nurlisa Alias Butet, Luky Adrianto, Achmad Farajallah; otherCatalogNumbers: PMP01, PMP02, PMP03; identifiedBy: Agus Alim Hakim;

dateIdentified: 2015-12-22; identificationRemarks: identified by morphology; identificationQualifier: cf.; language: ina; basisOfRecord: PreservedSpecimen

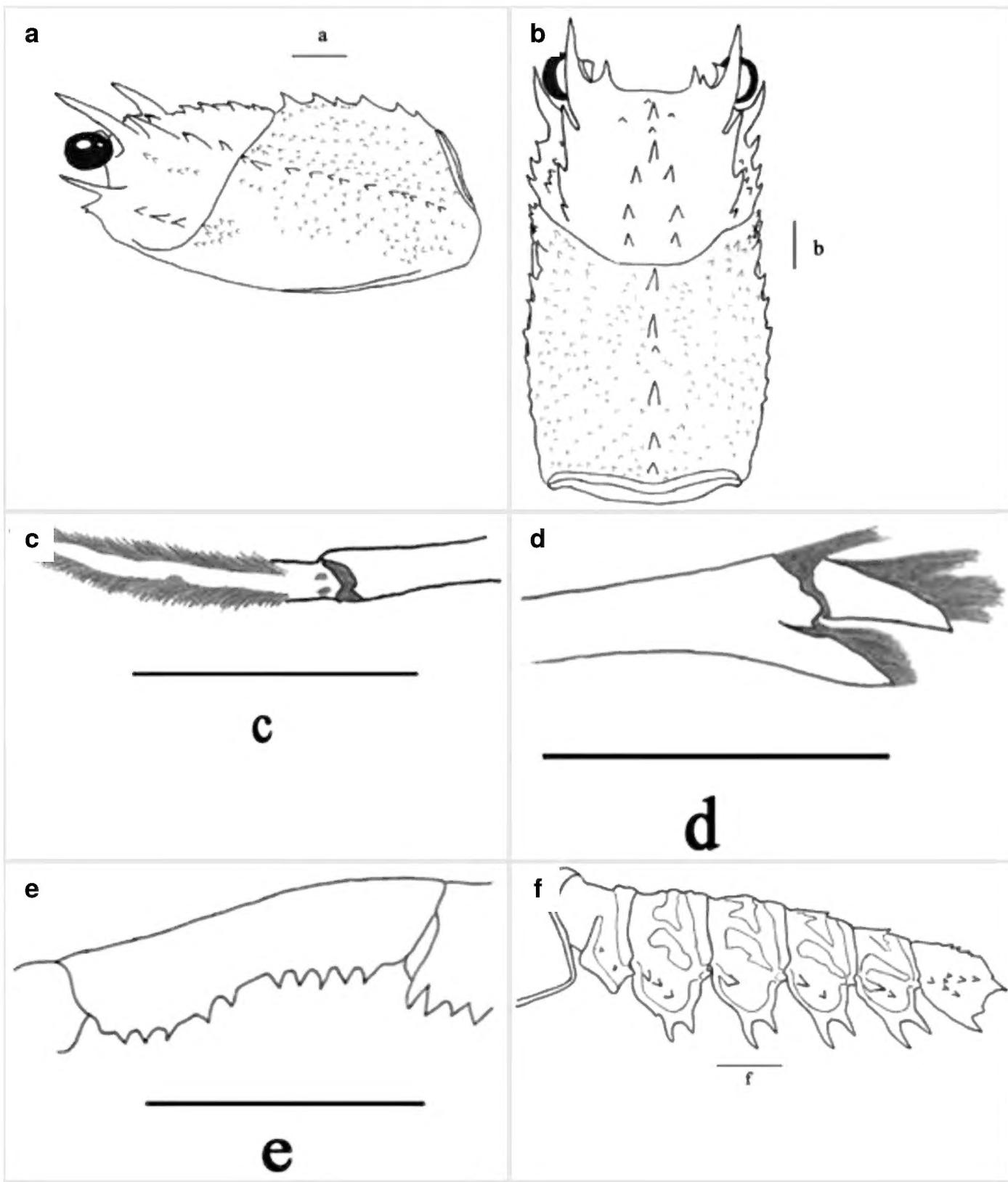


Figure 3.

*Puerulus mesodontus* (Chan et al., 2013), South Java (Indian Ocean). a, b, d – f female (cl 65.66 mm), c male (cl 55.07 mm). Scale bars 10 mm.

a: carapace and eye, lateral view.

b: carapace, dorsal view.

c: male, dactylus and distal part of propodus of left pereopod V.

d: female, dactylus and distal part of propodus of left pereopod V.

e: left merus of maxilliped III, lateral view.

f: posterior carapace and abdominal somites I to VI, lateral view.

## Description

Body moderately pubescent. Carapace similar in length to abdominal somites I-V; surfaces mostly covered with spinules and sharp granules. Supraorbital horn just overreaching the eye and extending to a position approximating the basal one-third of the antennular plate; dorsal margin almost straight, and smooth; followed by a row of three regularly spaced teeth decreasing sharply in size posteriorly; third tooth always prominent. Eye more long than broad (Fig. 3a, b). Postorbital spinules well-developed. Two rows of cervical spines converging anteriorly into a well-developed median spine. Three gastric teeth; the first tooth generally smaller or the third tooth generally larger; sometimes all gastric teeth similar in size or occasionally the first tooth larger; the base of the third tooth less than 1.5-fold wider than the base of the first tooth; the third tooth distinctly distant from the two anterior teeth (Figure 3b). Pereopod V not chelate in males, but chelate in females (Fig. 3c, d). The merus of maxilliped III with an anterodorsal spine (Fig. 3e). The abdomen with a raised granular-to-lobular surface, but the granules not forming distinct rows (Fig. 3f).

## Discussion

Most works on Indonesian lobsters have focused on the economically important species, such as diversity, distribution and genetic population of *Panulirus penicillatus* Olivier 1791 (Chow et al. 2011, Kalih 2012, Abdullah et al. 2014), first record occurrence and sexual dimorphism of *Linuparus somniosus* Berry and George 1972 (Wowor 1999), size distribution, length-weight relationship, condition factor, and sex ratio of *Panulirus versicolor* Latreille 1804 (Ongkers et al. 2014), and the distribution of *Panulirus homarus* (Linnaeus 1758), *P. longipes* (Milne-Edwards 1868), *P. ornatus* (Fabricius 1798), and *Parribacus antarticus* (Lund 1793) in Lombok island and its surrounding waters (Kalih 2012). In this paper we present the first record of *Puerulus mesodontus* from Pelabuhanratu Bay, southern Java. This is also the first record of the species in Indonesia. Chan et al. (2013) describes the distribution of *P. mesodontus* in the western Pacific as Japan, Taiwan, the Philippines, Papua New Guinea, the Solomon Islands, Vanuatu, New Caledonia, and Fiji.

This finding adds to new records of Indonesian crustaceans, which now include *Albunea symmysta* (Linnaeus, 1758) (Mashar et al. 2015), *Hippa marmorata* (Hombron and Jacquinot 1846) (Wardiatno et al. 2015), and *Hippa adactyla* Fabricius 1787 (Ardika et al. 2015). The finding emphasises the fact that Indonesian waters constitute a hotspot of Asian aquatic biodiversity. Future research on the species should focus on distribution, population dynamics, and genetic diversity.

## Acknowledgements

The research was funded by Indonesian Government through Directorate General of Higher Education, Ministry of Science Technology and Higher Education from Fiscal Year 2015. Mr. Agus is thanked for his kindly help in collecting samples. The authors are indebted to Dr. Komai Tomoyuki of Natural History Museum and Institute - Chiba, Niamh Kilgallen, PhD of Australian Museum, Sydney and Dr. Peter JF Davie of Queensland Museum for their constructive comments to improve the manuscript.

## References

- Abdullah MF, Alimuddin E, Muththalib M, Salama AJ, Imai H (2014) Genetic Isolation among the Northwestern, Southwestern and Central-Eastern Indian Ocean Populations of the Pronghorn Spiny Lobster *Panulirus penicillatus* . IJMS 15 (6): 9242-9254. DOI: [10.3390/ijms15069242](https://doi.org/10.3390/ijms15069242)
- Anrose A, Siraraz P, Dhas JC, Prasad GVA, Babu C (2010) Distribution and abundance of deep sea spiny lobster *Puerulus sewelli* in the Indian exclusive economic zone. Journal of the Marine Biological Association of India 52 (2): 162-165. [In English]. URL: <http://mbai.org.in/uploads/manuscripts/162-165-A.Anrose.pdf>
- Ardika PU, Farajallah A, Wardiatno Y (2015) First record of *Hippa adactyla* (Fabricius, 1787; Crustacea, Anomura, Hippidae) from Indonesian Waters. Tropical Life Sciences Research 26 (2): 105-110.
- Bate CS (1888) Report on the Crustacea Macrura collected by HMS Challenger during the years 1873-1876. Rep. Voy. Challenger, Zoology 24: 1-942.
- Berry P, George R (1972) A new species of the genus *Linuparus* (Crustacea, Palinuridae) from south-east Africa. Zoologische Mededelingen, Leiden 46: 17-23.
- Borradaile LA (1910) Penaeidea, Stenopodidea, and Reptantia from the Western Indian Ocean. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr J. Stanley Gardiner. Transactions of the Linnean Society of London, Zoology 2 (13): 257-264.
- Chan TY (1998) Lobster. In: Carpenter KE, Niem VH (Eds). FAO Species Identification Guide for Fishery Purposes. The Living Marine Resources of the Western Central Pacific. FAO, Rome Volume 2: 687-1396.
- Chan TY (2010) Annotated Checklist of the World's Marine Lobsters (Crustacea: Decapoda: Astacidea, Glypheidea, Achelata, Polychelida). The Raffles Bulletin of Zoology 23: 153-181.
- Chan TY, Ma KY, Chu KH (2013) The deep-sea spiny lobster genus *Puerulus* Ortmann, 1897 (Crustacea, Decapoda, Palinuridae), with descriptions of five new species. In: Ahyong ST, Chan TY, Ng PKL (Eds). Tropical Deep-Sea Benthos 27. Muséum national d'Histoire naturelle, 27: 191-230.
- Chow S, Jeffs A, Miyake Y, Konishi K, Okazaki M, Suzuki N, Abdullah MF, Imai H, Wakabayasi T, Sakai M (2011) Genetic Isolation between the Western and Eastern Pacific Populations of Pronghorn Spiny Lobster *Panulirus penicillatus* . PLoS ONE 6 (12): e29280. DOI: [10.1371/journal.pone.0029280](https://doi.org/10.1371/journal.pone.0029280)

- Fabricius JC (1787) *Mantissa Insectorum Sistens Eorum Species Nuper Detectus Adjectis Characteribus Genericis Differentiis Specificis, Emendationibus, Observationibus.* Hafniae. I: 348 pp.
- Fabricius JC (1798) *Supplementum Entomologiae systematicae. Proft et Storch,* Hafniae: 573 pp.
- Holthuis LB (1963) Preliminary descriptions of some new species of Palinuridea (Crustacea Decapoda, Macrura, Reptantia). *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series C Biological and Medical Sciences* 66: 54-60.
- Holthuis LB (1991) FAO species catalogue. Marine lobsters of the world. An annotated and illustrated catalogue of species of interest to fisheries known to date. FAO Fisheries Synopsis 125. Vol. 13. FAO, 292 pp.
- Hombron JB, Jacquinot H (1846) *Crustacés. Atlas d'Histoire Naturelle. Zoologie. Voyage au Pôle Sud et dans l'Océanie sur les corvettes l'Astrolabe et la Zélée pendant les années 1837–1838–1839–1840.* Crustacés. pls.: 1-9.
- Kalih LATTWS (2012) Diversity and distribution of Palinurid and Scyllarid lobster in the Lombok island coastal waters. Thesis. Graduate School, Gadjah Mada University, Yogyakarta, 21 pp.
- Latreille P (1804) Des langoustes du Muséum national d'Histoire naturelle. *Annales Muséum Histoire naturelle, Paris* 3: 388-395.
- Linnaeus C (1758) *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata.* Laurentius Salvius: Holmiae ii: 824 pp.
- Lund N (1793) *Slaegten Scyllarus. lagtagelser til insekternes Historie.* I. *Skrifter af naturhistoire Selskabet Kjøbenhavn* 2 (2): 17-22, Pl. 1.
- Mashar A, Wardiatno Y, Boer M, Butet NA, Farajallah A, Ardika PU (2015) First record of *Albunea symmysta* (Crustacea: Decapoda: Albuneidae) from Sumatra and Java, Indonesia. *AACL* 8 (4): 611-615.
- Milne-Edwards A (1868) Description de quelques Crustacés nouveaux provenant des voyages de M. Alfred Grandidier à Zanzibar et à Madagascar. *Nouvelles Archives Muséum Histoire Naturelle, Paris* 4: 69-92, Pls 19-21.
- Olivier A (1791) *Écrevisse, Astacus.* In: Olivier, A. G., *Insectes. Encyclopedie méthodique, Histoire naturelle. Insectes* 6: 327-349.
- Ongkers OT, Pattiasina BJ, Tetelepta JMS, Natan Y, Pattikawa JA (2014) Some biological aspects of painted spiny lobster (*Panulirus versicolor*) in Latuhalat waters, Ambon Island, Indonesia. *AACL* 7 (6): 469-474.
- Ortmann A (1897) *Carcinologische studien. Zoologische Jahrbücher (Systematik)* 10: 258-372.
- Ramadan MM (1938) The Astacura and Palinura. *Scientific Reports John Murray Expedition* 5 (5): 123-145.
- Wardiatno Y, Ardika PU, Farajallah A, Mashar A, Ismail (2015) The mole crab *Hippa marmorata* (Hombron et Jacquinot, 1846) (Crustacea Anomura Hippidae): a first record from Indonesian waters. *Biodiversity Journal* 6 (2): 517-520.
- Wowor D (1999) The Spear lobster, *Linuparus somniosus* Berry & George, 1972 (Decapoda, Palinuridae) in Indonesia. *Crustaceana* 72 (7): 673-684. DOI: [10.1163/156854099503717](https://doi.org/10.1163/156854099503717)